FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

April 21 to April 27, 2013 (Week 17)

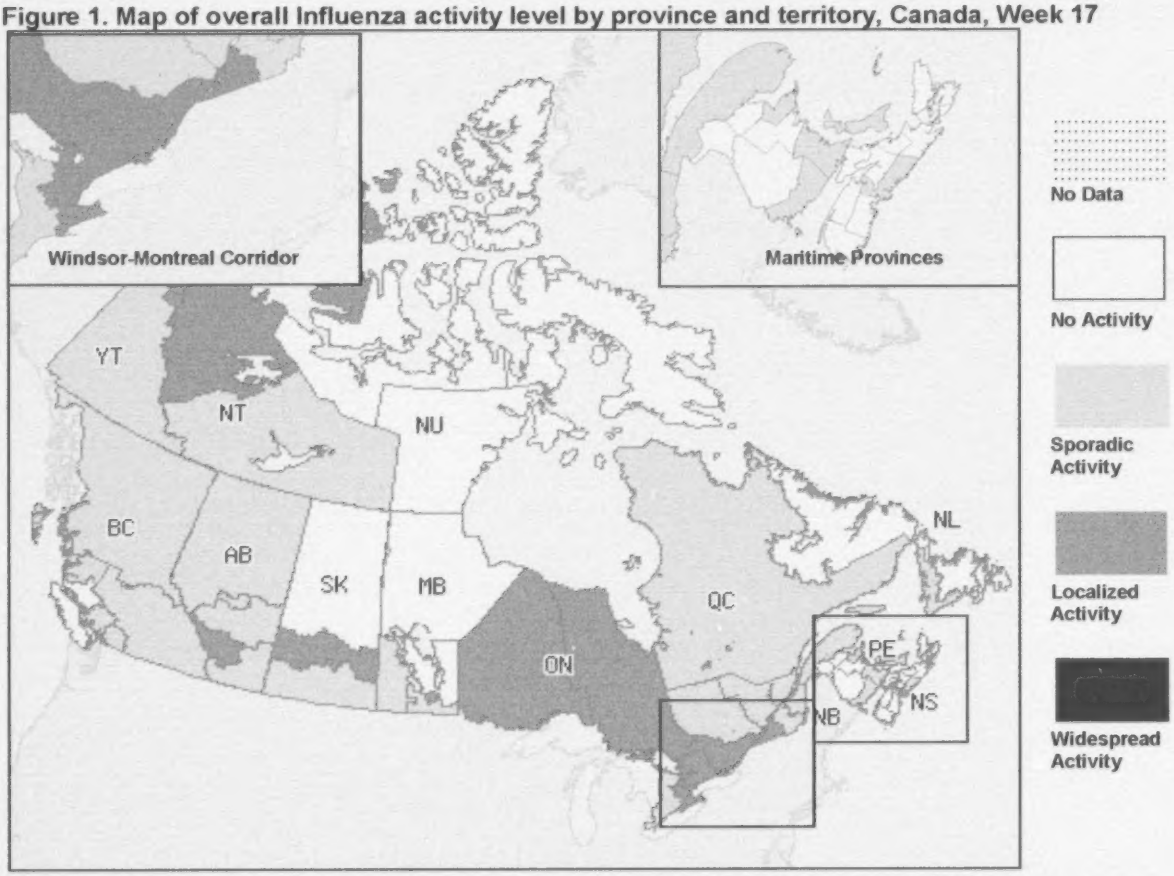
Overall Summary

- Influenza activity in Canada continued its slow decline in week 17, with the percentage of laboratory tests positive for influenza at 11%. Detections of influenza B decreased to 81.7% of positive specimens in week 17.
- The ILI consultation rate decreased slightly, and the number of regions reporting localized activity was the same as the previous week.
- The increased circulation of influenza B in recent weeks has been reflected in both adult and paediatric hospitalizations. Overall this season, 20-26% of paediatric hospitalizations have been associated with influenza B compared to 7% of adult hospitalizations.
- Detections of rhinovirus and parainfluenza were both stable in week 17, but have been increasing gradually in recent weeks. RSV continued the downward trend observed since week 08.

Influenza Activity (geographic spread) and Outbreaks

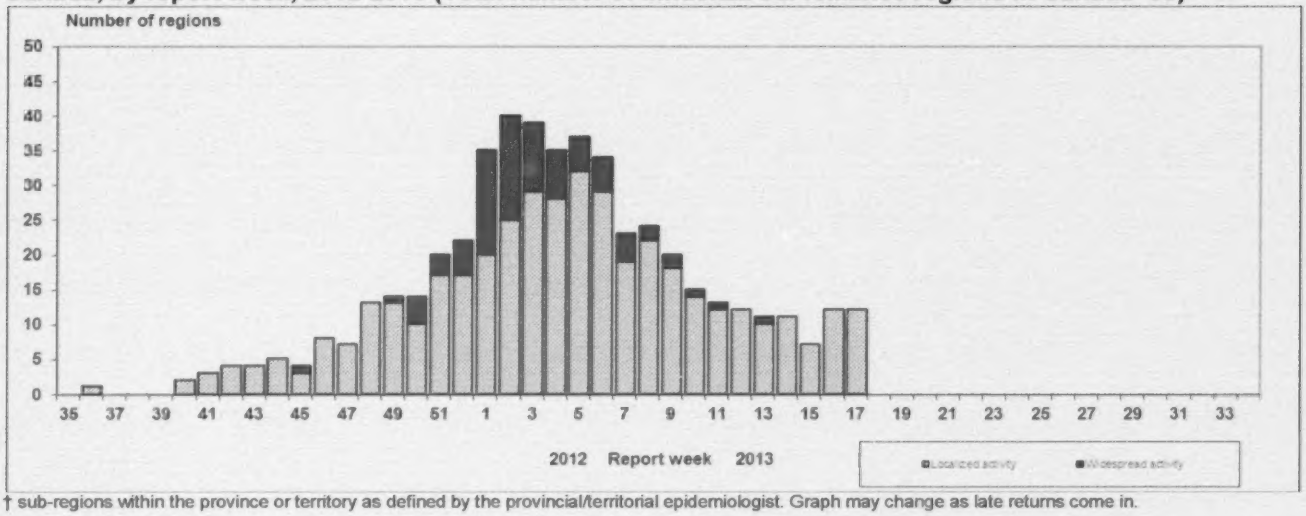
In week 17, no regions reported widespread activity, twelve regions [AB(1), SK(1), MB(1), ON(6), QC(2) and NT(1)] reported localized activity and 24 regions reported sporadic activity. The number of regions reporting widespread or localized activity was the same as the previous week (Figures 1 and 2). Eight new influenza outbreaks were reported: four in long-term-care facilities, two in hospitals, and two in schools (Figure 3).

Figure 1. Map of overall Influenza activity level by province and territory, Canada, Week 17



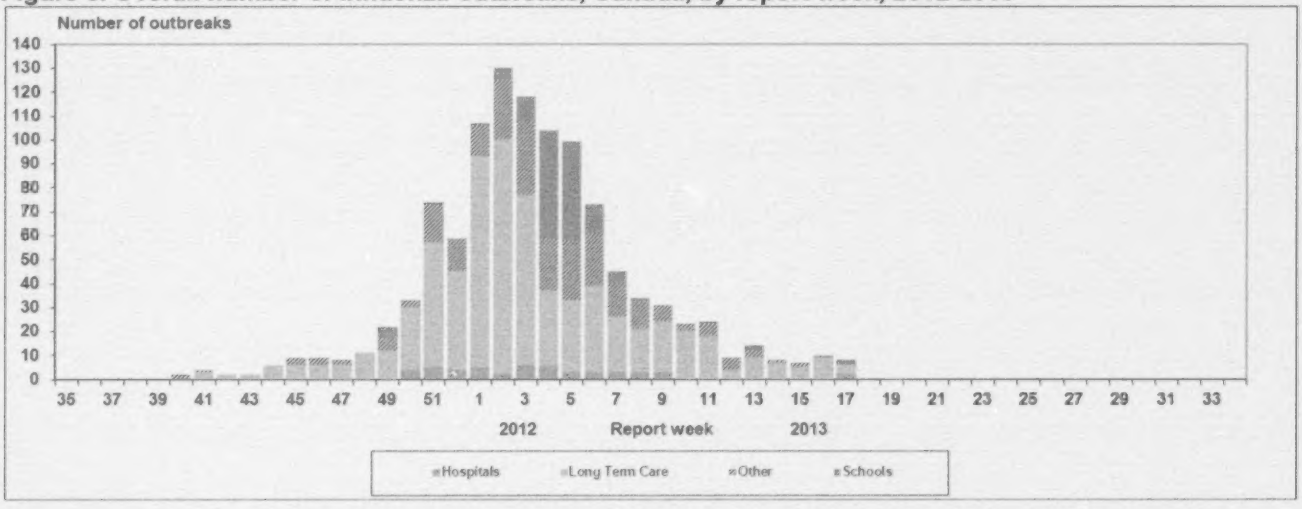
Note: Influenza activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates (see graphs and tables) and reported outbreaks. Please refer to detailed definitions on the last page. For areas where no data is reported, late reports from these provinces and territories will appear on the FluWatch website.

Figure 2. Number of influenza surveillance regions† reporting widespread or localized influenza activity, Canada, by report week, 2012-2013 (Total number of influenza surveillance regions in Canada=58)



† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.

Figure 3. Overall number of influenza outbreaks, Canada, by report week, 2012-2013



Influenza and Other Respiratory Virus Detections

The overall percentage of positive influenza tests decreased slightly compared to recent weeks, from an average of 11.7% during weeks 11 to 16, to 11.0% in week 17. Detections of influenza B decreased for the second consecutive week, to 81.7% of positive influenza detections in week 17 (Figure 4). Among the influenza viruses detected in week 17 (n=371), 18.3% were positive for influenza A viruses [of which 45.6% were A(H1N1)pdm09, 16.2% were A(H3), and 38.2% were A(unsubtyped)] (Table 1). Cumulative influenza virus detections by type/subtype to date are as follows: 87.2% influenza A [34.5% A(H3), 4.5% A(H1N1)pdm09 and 61.0% A(unsubtyped)] and 12.8% influenza B (Table 1).

Detailed information on age and type/subtype has been received for 23,646 cases to date this season (Table 2). The proportion of cases by age group is as follows: 14.1% <5 years; 9.8% between 5-19 years; 15.7% between 20-44 years; 17.0% between 45-64 years of age; 43.4% ≥65 years.

The percentage of positive tests for rhinovirus was similar to the previous week at 11.6% in week 17, but has been slowly increasing since week 01. The percentage of positive tests for parainfluenza (5.2%) has also been increasing gradually over the past 10 weeks. The percentage of tests positive for respiratory syncytial virus (RSV) (6.1%) continued its decline from a peak in week 08. The percentage of positive tests for human metapneumovirus (hMPV) (4.7%) decreased for the third week in a row, and the percentage of positive tests for coronavirus (1.6%) has been decreasing slowly since week 04 (Figure 5)*.

* For more details, see the weekly Respiratory Virus Detections in Canada Report.

Table 1. Weekly and Cumulative numbers of positive influenza specimens by Provincial Laboratories, Canada, 2012-2013

Reporting provinces	Weekly (April 21 to April 27, 2013)						Cumulative (August 26, 2012 to April 27, 2013)					
	Influenza A					B	Influenza A					B
	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total
BC	8	0	1	6	1	9	1909	0	1448	220	241	373
AB	13	0	4	9	0	54	2340	0	1764	433	143	706
SK	3	0	1	0	2	21	834	0	476	73	285	258
MB	2	0	0	0	2	12	657	0	78	10	569	82
ON	21	0	5	12	4	64	8241	0	3776	365	4100	788
QC	11	0	0	1	10	132	9785	0	546	33	9206	1659
NB	0	0	0	0	0	10	1853	0	771	65	1017	47
NS	6	0	0	1	5	0	388	0	165	8	215	6
PE	3	0	0	2	1	0	114	0	76	7	31	1
NL	1	0	0	0	1	1	715	0	152	0	563	16
Canada	**68**	**0**	**11**	**31**	**26**	**303**	**26836**	**0**	**9252**	**1214**	**16370**	**3936**

*Unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Note: Weekly data is based on week of positive lab detection. Cumulative data includes updates to previous weeks; due to reporting delays, the sum of weekly report totals do not add up to cumulative totals.

Table 2. Weekly & Cumulative numbers of positive influenza specimens by age groups reported through case-based laboratory reporting, Canada, 2012-2013*

Age groups	Weekly (April 21 to April 27, 2013)					Cumulative (Aug. 26, 2012 to April 27, 2013)				
	Influenza A				B	Influenza A				B
	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total
<5	8	1	1	6	32	2668	212	860	1596	667
5-19	0	0	0	0	48	1452	66	638	748	860
20-44	7	6	0	1	23	3163	335	1217	1611	548
45-64	7	4	0	3	39	3454	308	1231	1915	561
65+	11	4	4	3	51	9604	130	3711	5763	669
Unknown	0	0	0	0	0	166	20	144	2	1
Total	**33**	**15**	**5**	**13**	**193**	**20507**	**1071**	**7801**	**11635**	**3306**

*Please note that this table reflects the number of specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Delays in the reporting of data may cause data to change retrospectively.

Figure 4. Influenza tests reported and percentage of tests positive, Canada, by report week, 2012-2013

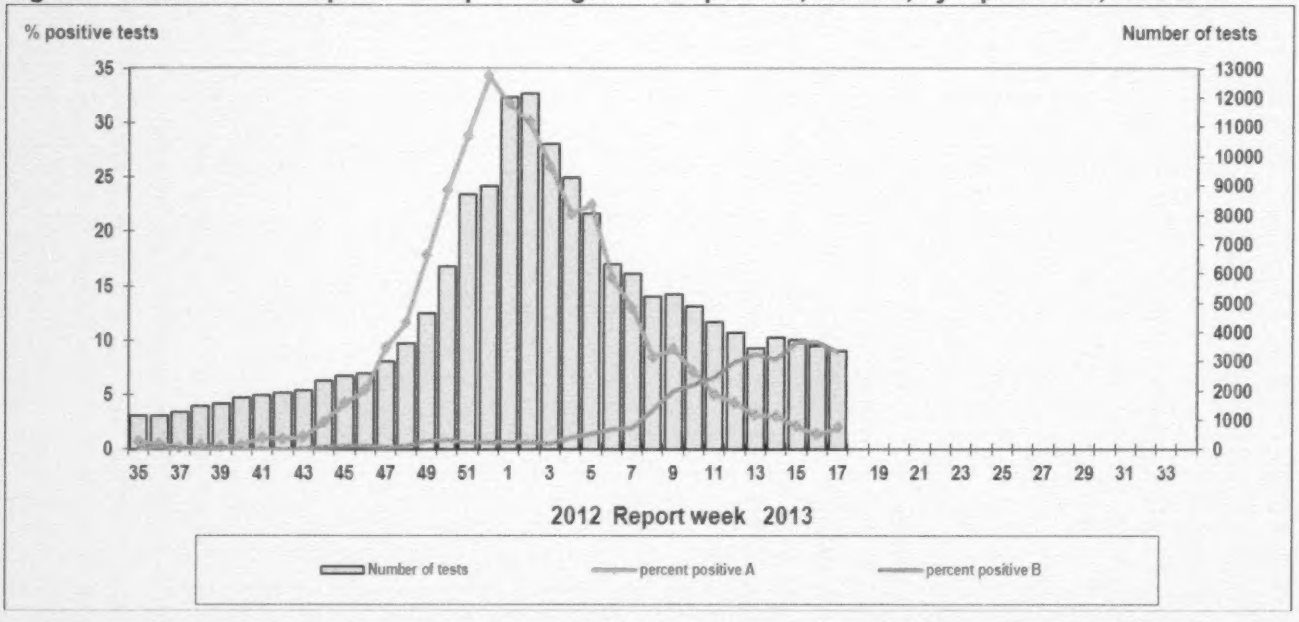
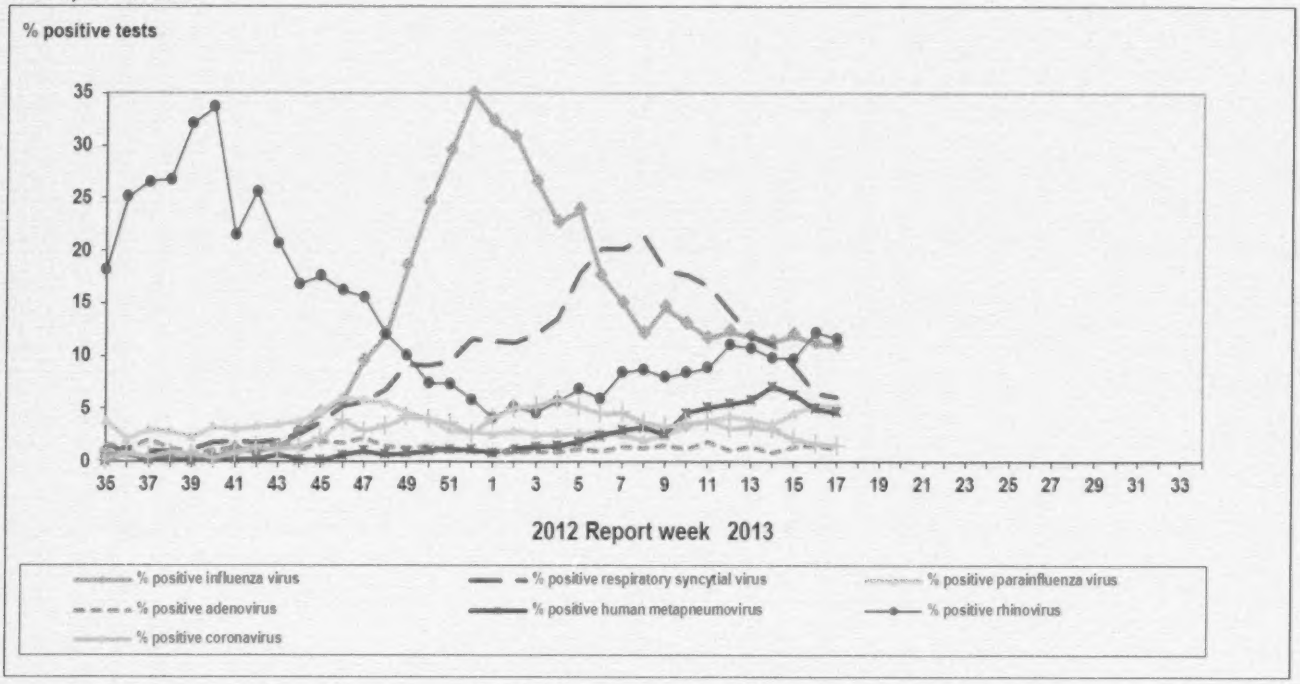


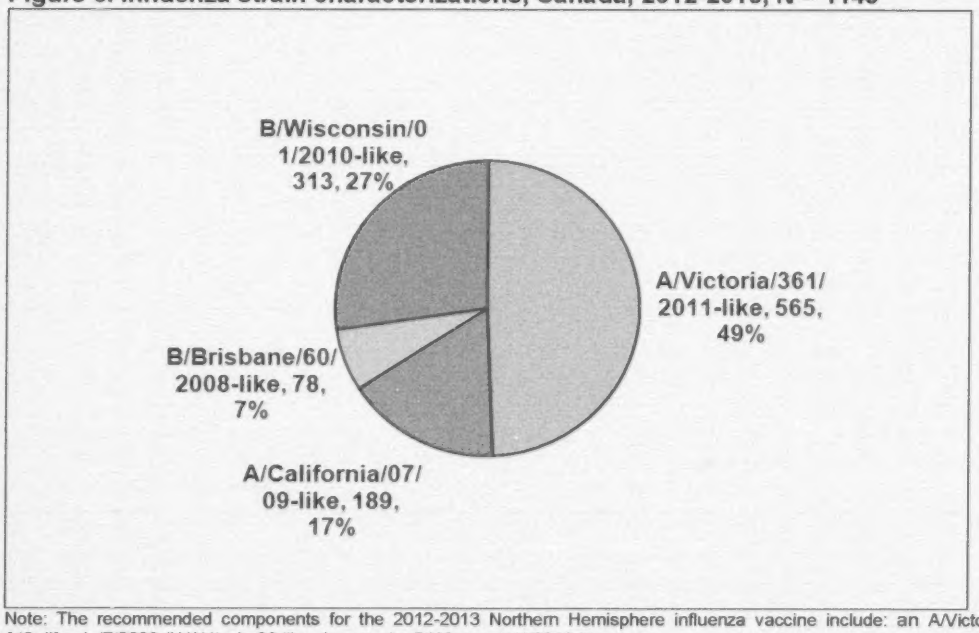
Figure 5. Percent positive influenza tests, compared to other respiratory viruses, Canada, by reporting week, 2012-2013



Influenza Strain Characterizations

During the 2012-13 season, the National Microbiology Laboratory (NML) has antigenically characterized 1145 influenza viruses. The 565 influenza A(H3N2) viruses were antigenically similar to the vaccine strain A/Victoria/361/2011 and the 189 A(H1N1)pdm09 viruses were antigenically similar to the vaccine strain A/California/07/09. Among the influenza B viruses, 313 were antigenically similar to the vaccine strain B/Wisconsin/01/2010 (Yamagata lineage) and 78 were similar to B/Brisbane/60/2008 (Victoria lineage; component of the 2011-2012 seasonal influenza vaccine) (Figure 6).

Figure 6. Influenza strain characterizations, Canada, 2012-2013, N = 1145



Note: The recommended components for the 2012-2013 Northern Hemisphere influenza vaccine include: an A/Victoria/361/2011 (H3N2)-like virus; an A/California/7/2009 (H1N1)pdm09-like virus; and a B/Wisconsin/1/2010-like virus.

Antiviral Resistance

During the 2012-13 season, NML has tested 1081 influenza viruses for resistance to oseltamivir, and 1078 influenza viruses for resistance to zanamivir. Among these, one A(H3N2) virus was resistant to oseltamivir and zanamivir. A total of 1172 influenza A viruses were tested for amantadine resistance and all but one were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2012-2013

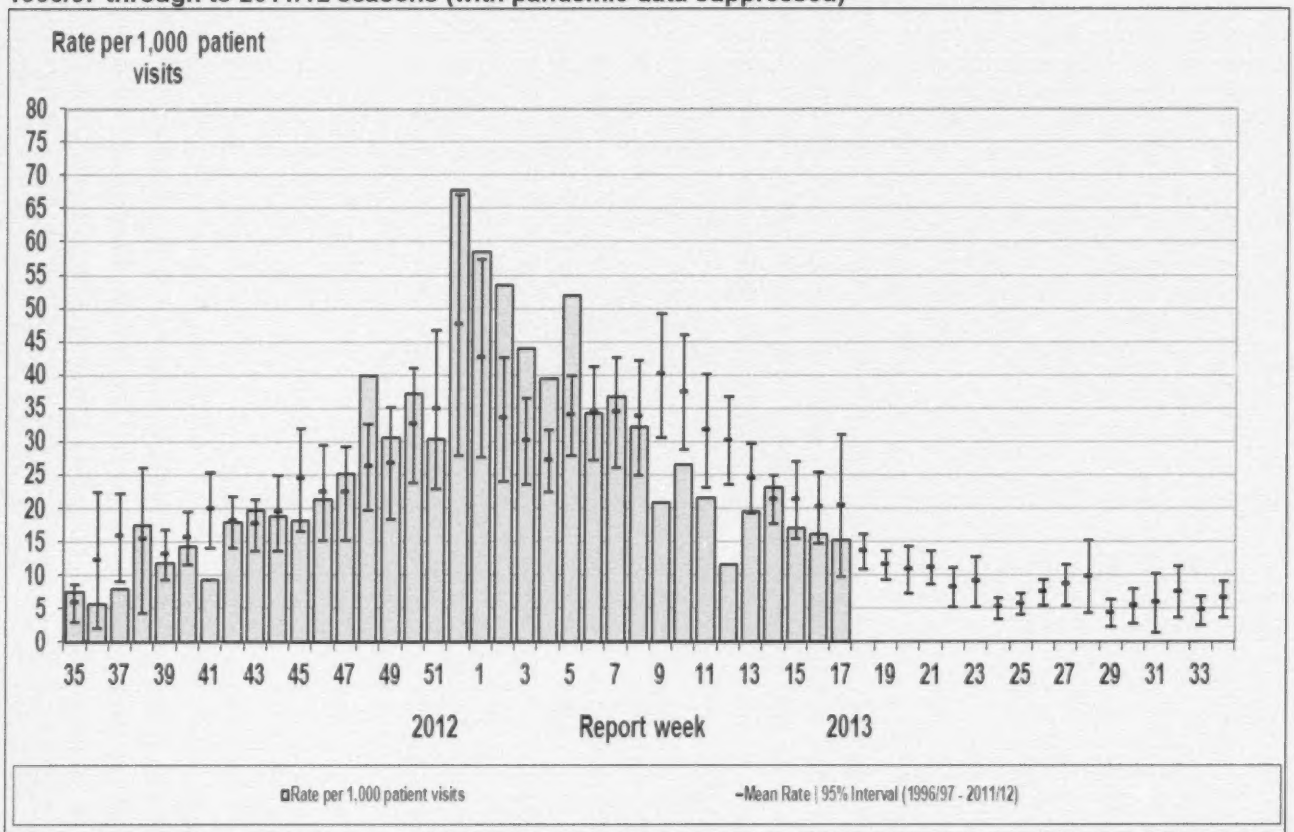
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	559	1 (0.2%)	559	1 (0.2%)	952	951 (99.9%)
A (H1N1)	186	0	183	0	220	220 (100%)
B	336	0	336	0	NA*	NA*
TOTAL	1081	1 (0.1%)	1078	1 (0.1%)	1172	1171 (99.9%)

* NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate decreased slightly from 16.1 ILI consultations per 1,000 patient visits in week 16 to 15.2 / 1,000 in week 17; and remains within the expected range (Figure 7). In week 17, the highest consultation rate was observed in children under 5 years of age (33.2/1,000).

Figure 7. Influenza-like illness (ILI) consultation rates, Canada, by report week, 2012-2013 compared to 1996/97 through to 2011/12 seasons (with pandemic data suppressed)



Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons). Delays in the reporting of data may cause data to change retrospectively.

Severe Respiratory Illness Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 17, 15 laboratory-confirmed influenza-associated paediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 22 in week 16. Twelve of the cases reported in week 17 were identified with influenza B. The age distribution is as follows: 3 (20.0%) between 0-5 months, 2 (13.3%) between 6-23 months, 5 (33.3%) 2-4 years of age, 3 (20.0%) 5-9 years of age and 2 (13.3%) 10-16 years of age. Two cases were admitted to an intensive care unit (ICU) during week 17, one child 6-23 months of age with A(H1N1)pdm09, and one 10-16 years of age with influenza B. No deaths were reported in week 17.

Since the start of the 2012-13 season, a total of 839 influenza-associated paediatric hospitalizations have been reported by the IMPACT network: 621 (74.0%) with influenza A [of which 121 (19.5%) were A(H3N2), 23 (3.7%) were A(H1N1)pdm09 and the remaining 477 were A(unsubtyped); and 218 (26.0%) with influenza B. The distribution of cases by age group is as follows: 154 (18.4%) <6 months of age; 198 (23.6%) age 6-23 months; 240 (28.6%) age 2-4 years; 175 (20.9%) age 5-9 years; and 72 (8.6%) age 10-16 years. Eighty-nine (10.6%) of the 839 cases were admitted to the ICU. Of the 65 ICU admissions with available data, 57 (87.7%) cases had at least one co-morbidity. One death has been reported to date this season in a child 6-23 months of age with an underlying condition, infected with influenza B.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 17, four laboratory-confirmed influenza-associated adult (≥16 years of age) hospitalizations were reported by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 11 in week 16. Three of the four hospitalizations were cases of influenza B, and one was A(H1N1)pdm09. Two cases were ≥65 years of age, and two were 45-64 years of age. No ICU admissions or deaths were reported in week 17.

From November 4, 2012 to April 27, 2013, 1,771 influenza-associated adult hospitalizations were reported by the PCIRN-SOS network: 1,620 (91.5%) with influenza A [of which 310 were A(H3N2), 19 were A(H1N1)pdm09, and 1,291 were A(unsubtyped)]; 105 (5.9%) with influenza B, and the type has not been reported for 46 cases. The age distribution of hospitalizations is as follows: 1,209 (68.3%) were ≥65 years of age, 362 (20.4%) were 45-64 years, 192 (10.8%) were 20-44 years, and 8 (0.5%) were <20 years of age. ICU admission was required for 212 hospitalizations; the majority of which were adults ≥65 years of age (123; 58.0%). Of the ICU admissions, 90 (42.5%) had at least one co-morbidity, five (2.4%) had no co-morbidities, and 117 had no information to date. A total of 115 deaths have been reported: 26 with influenza A(H3N2), one with A(H1N1)pdm09, 82 with A(unsubtyped), five with influenza B, and one untyped. More than 85% of the deaths (98/115) were in adults ≥65 years of age, 14 (12.2%) were adults 45-64 years of age, and 3 (2.6%) were 20-44 years of age. Fifty-two (45.2%) deaths occurred in individuals who had at least one co-morbidity. Detailed clinical information on co-morbidities is not known for the remaining cases.

Note: The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Provincial/Territorial Influenza Hospitalizations and Deaths (Aggregate Surveillance System)

In week 17, 129 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories*. The majority of cases were influenza A (63.6%). The highest proportion of hospitalisations were in adults ≥65 years of age (37.2%), followed by children 0-4 years of age (26.4%). Of the 30 cases with available data, four cases were admitted to the ICU, all with influenza A: two 45-64 years of age, one 20-44 years of age and one 0-4 years of age. Nine deaths were reported in week 17: five adults ≥65 years of age with influenza A; two adults ≥65 years of age and two 45-64 years of age with influenza B.

To date this season, 4,639 influenza-associated hospitalizations have been reported, of which 89.8% have been influenza A. Of those subtyped (47.4%), influenza A(H3) was the predominant influenza strain. The cumulative proportion of hospitalizations with influenza B continues to increase (10.2% in week 17). Age information was available for 4,636 cases, and the age distribution is as follows: 2,484 (53.6%) were ≥65 years of age; 774 (16.7%) were 45-64 years of age; 420 (9.1%) were 20-44 years of age; 40 (0.9%) were 15-19 years of age; 218 (4.7%) were 5-14 years; and 700 (15.1%) were 0-4 years of age. Of the 1,251 cases with available data, there have been 196 hospitalisations for which admission to an ICU was required; the highest proportions have been in adults 45-64 years of age, followed by adults ≥65 years of age (36.2% and 33.7%, respectively). To date, 295 deaths have been reported: 243 adults ≥65 years of age, 35 adults 45-64 years; 11 adults 20-44 years, one child 5-14 years of age, and 5 were children 0-4 years of age. It is important to note that the cause of death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

Note*: The number of new influenza-associated hospitalizations and deaths reported by the Aggregate Surveillance System each week may be overestimated, as it may include retrospective updates to data from Ontario for previous weeks. These data may also include cases reported by the IMPACT and PCIRN networks. Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, NS, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not reported in Ontario.

International Influenza Updates

WHO: No new influenza surveillance update was available from the WHO since the report dated 26 April 2013.
World Health Organization influenza update

United States: No new influenza surveillance update was available from the CDC since the report for week 16.
Centers for Disease Control and Prevention seasonal influenza report

Europe: In week 17, most countries reported low intensity of ILI/ARI activity and a decreasing trend. In the 4 countries reporting results of 20 or more sentinel specimens, a median of 11% were positive for influenza in week 17. The proportion of influenza B detections has increased from 24% in week 03 to 62% in week 17. Among influenza A viruses in week 17, 71% were A(H3N2) and 29% were A(H1N1)pdm09. Since the beginning of the season, 63% of detections from sentinel and non-sentinel sources were influenza A [67% A(H1N1)pdm09 and 33% A(H3N2)] and 37% were influenza B. Among the 695 A(H1N1)pdm09 viruses tested for resistance to oseltamivir from 12 countries, 13 (2%) were found to contain the H275Y mutation. The number of hospitalizations for severe acute respiratory illness (SARI) and the number positive for influenza have returned to pre-season levels in most participating countries. Analysis from 12 countries revealed a broad peak of excess all-cause mortality among adults ≥65 years of age. Excess mortality was observed starting in week 01 to a peak in week 10; it has been declining since but is not yet at normal levels. In countries reporting detections of RSV, the proportion of positive tests has been declining since a peak in week 52.
EuroFlu weekly electronic bulletin

Emerging Respiratory Pathogens

Human Avian Influenza
Influenza A(H7N9): Between April 27 and May 2, the WHO reported an additional 16 cases of avian influenza A(H7N9) in eastern China. Avian influenza A(H7N9) has been reported in three new provinces: Fujian, Jiangxi and Hunan. The public health risk posed by avian influenza A(H7N9) from China to Canada remains low at this time. Since March 2013, 128 cases and 26 deaths of avian influenza A(H7N9) have been reported from eight provinces and two municipalities. The number of cases (and deaths) by jurisdiction is as follows: Anhui 4 (1), Fujian 3 (0), Henan 4 (0), Hunan 3 (0), Jiangsu 26 (5), Jiangxi 4 (0), Shandong 2 (0), Zhejiang 46 (6), Beijing 1 (0), Shanghai 34 (12) and Taiwan 1(0). The location of the two most recently reported deaths have not yet been identified. More than 1,800 close contacts of confirmed cases are being closely monitored. Some of the confirmed cases had contact with animals or with an animal environment. Investigations into the source and route of transmission are still in progress, but there has been no evidence of ongoing human-to-human transmission. The WHO is in contact with national authorities and is following the event closely.
PHAC – Avian influenza A(H7N9)
PHAC – A(H7N9) risk assessment
WHO – Influenza at the human-animal interface
WHO – Disease Outbreak News
WHO – Frequently Asked Questions on human infection with influenza A(H7N9)

Human Swine Influenza
No new human cases of infection with swine influenza viruses or variants were reported in week 16.
Centers for Disease Control and Prevention seasonal influenza report

Novel Coronavirus (HCoV-EMC/2012)
Since 26 March 2013, seven new cases of novel coronavirus (HCoV-EMC/2012) from Saudi Arabia have been reported by the WHO. Five of the cases resulted in death, and two are currently in critical condition. Details have not yet been made available, however preliminary investigation show no indication of recent travel or animal contact of any of the confirmed cases. The confirmed cases are not from the same family. Since April 2012, 24 cases of laboratory-confirmed HCoV-EMC/2012 have been identified, including 16 deaths.
PHAC – Novel coronavirus (HCoV-EMC/2012)
PHAC – HCoV-EMC/2012 risk assessment
WHO – Coronavirus infections

FluWatch reports include data and information from the following sources: laboratory reports of positive influenza tests in Canada (National Microbiology Laboratory), sentinel physician reporting of influenza-like illness (ILI), provincial/territorial assessment of influenza activity based on various indicators, including laboratory surveillance, ILI reporting, and outbreaks, influenza-associated paediatric and adult hospitalizations, antiviral sales in Canada, and WHO and other international reports of influenza activity.

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

ILI definition for the 2012-2013 season

ILI in the general population: Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

Definitions of ILI/influenza outbreaks for the 2012-2013 season

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Influenza Activity Levels Definition for the 2012-2013 season

Influenza Regional Activity levels are defined as:

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html. Ce rapport est disponible dans les deux langues officielles.